July 16, 1996

Mr. David Bennett
U.S. Environmental Protection Agency
1200 Sixth Avenue, ECL-115
Seattle, WA 98101

REF: Contract No. 68-W6-0008
Technical Direction Document 96-03-0018

Dear Mr. Bennett:

Per your instructions please find enclosed the corrections to the draft version of the Bruhn Point Landfill Preliminary Assessment report. These corrections consisted of deleting the word "Draft" from the report in order to finalize it.

This Technical Direction Document will now be closed. If you have any questions please call me at 206/624-9537.

Sincerely,

Jeffrey Fowlow
Project Leader

JTK/jlw

Enclosure

cc: Gary Sink, U.S. EPA, Region 10 (letter only)
William Carberry, E & E, Seattle (letter only)

PRELIMINARY ASSESSMENT
BRUHN POINT LANDFILL SITE
KODIAK, ALASKA

START REGION X

Contract No. 68-W6-0008
Technical Direction Document No. 96-03-0018

July 1996

Prepared By:

ECOLOGY AND ENVIRONMENT, INC.
1500 First Interstate Center
999 Third Avenue
Seattle, Washington 98104

Prepared For:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

PRELIMINARY ASSESSMENT
BRUHN POINT LANDFILL SITE
KODIAK, ALASKA

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ILLUSTRATIONS

1.0 INTRODUCTION

Ecology and Environment, Inc., (E & E) has been tasked by the U.S. Environmental Protection Agency (EPA) to provide technical support for completion of a Preliminary Assessment (PA) at the Bruhn Point Landfill (Bruhn Point) site located in Kodiak, Alaska. E & E completed PA activities under Technical Direction Document No. 96-03-0018, issued under EPA Region X Superfund Technical Assessment and Response Team (START) Contract Number 68-W6-0008. The specific goals for the Bruhn Point PA identified by EPA are presented below:

- Determine the potential threat to public health or the environment posed by the site;
- Determine the potential for a release of hazardous constituents into the environment; and
- Determine the potential for placement of the site on the National Priorities List.

Completion of the PA included reviewing existing site information, collecting receptor information within the range of site influence, and determining regional characteristics. This document includes a discussion of background site information (Section 2); a discussion of migration/exposure pathways and potential receptors (targets) (Section 3); and a list of pertinent references (Section 4).

2.0 SITE BACKGROUND

2.1 SITE LOCATION

Site Name:	Bruhn Point Landfill
CERCLIS ID No.:	AK0001401371
Location:	Approximately 10 miles southwest of Kodiak, Alaska 99615
Latitude:	57E 42' 32.40" North
Longitude:	152E 32' 52.20" West
Legal Description:	Section 6, Township 29 South, Range 20 West
Site Owners:	Koniag, Inc. 4300 B Street, Suite 407 Anchorage, Alaska 99503
Site Operators:	Leisnoi, Inc. Kodiak, Alaska 99615
Site Contacts:	Koniag, Inc. 4300 B Street, Suite 407 Anchorage, Alaska 99503 Contact: John Merrick, Land Manager (907) 561-2668 Leisnoi, Inc. Kodiak, Alaska 99615 Contact: David Nefheim, Forester (907) 486-8191 U.S. Army Corps of Engineers Alaska District Anchorage, Alaska 99503 Contact: Ted Schindler, Project Manager (907) 753-5640

2.2 SITE DESCRIPTION

The Bruhn Point site is located on the south shore of Women's Bay approximately 10 road miles southwest of the city of Kodiak, Alaska (Figure 2-1). The property was withdrawn from the public domain

by the Department of the Navy in 1939 and became a portion of the Kodiak Naval Station Reservation, which served as an important staging area during World War II. The 4.5 acre landfill was constructed and used by the military during the 1950's. Suspected landfill material consists of military equipment, construction debris, and household refuse. The site and surrounding area remained a part of the Kodiak Naval Station Reservation until 1975, when Public Land Order 5550 withdrew 688 acres, including Bruhn Point, for possible ownership transfer by the Koniag Native Corporation pursuant to the Alaska Native Claims Settlement Act. The Bruhn Point site, both surface and subsurface estates, was officially conveyed to Koniag, Inc. in 1980 (Montgomery Watson, 1994).

Koniag, Inc. subsequently leased the site to a second Native Corporation, Leisnoi, Inc., for use as a staging area for logging operations. The site was actively used for this purpose from 1994-1995, but activities ceased when buried objects began protruding through the ground. At present, the site still has logs stored on it, but no other types of activity are being conducted (Nefheim, 1996).

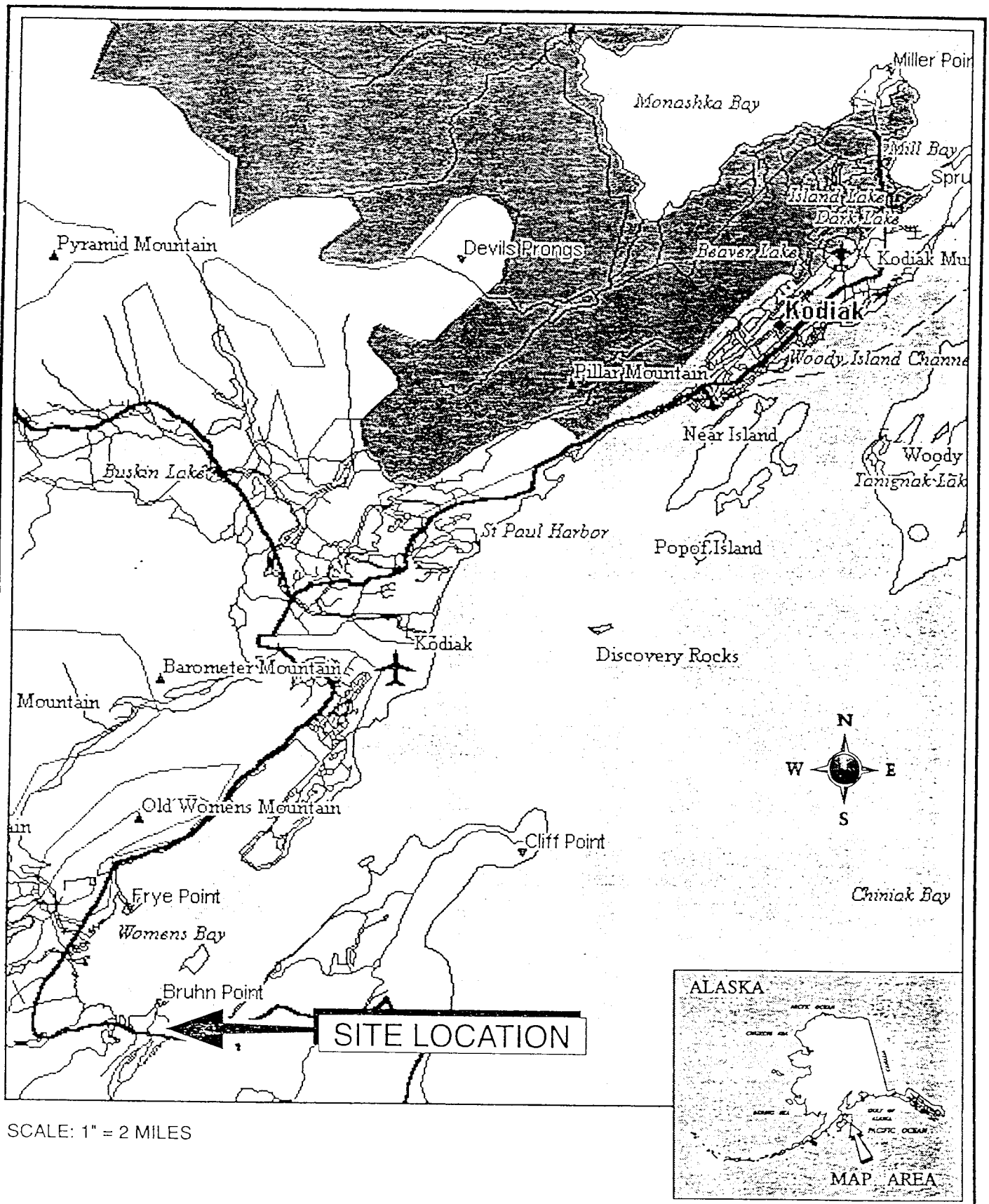
The site consists of the landfill mass, which comprises approximately a third of Bruhn Point, and is bordered on the south by the Kodiak Island Highway (Figure 2-2). Tidal wetlands and sloughs surround the site on the east and west, and the remainder of Bruhn Point lies to the north. At least one off-road vehicle trail leads from the highway, crosses the site, and continues to the north (Montgomery Watson, 1994). The landfill mass rises approximately 10-15 feet above the surrounding area and is relatively flat.

2.3 SITE OPERATIONS AND WASTE CHARACTERISTICS

The site was operated as a landfill for the disposal of military equipment, construction debris, and household refuse by the U.S. Navy during the 1950's (Montgomery Watson, 1994). Contaminants of concern at the site associated with these operations are unknown because records of specific landfill material were not kept.

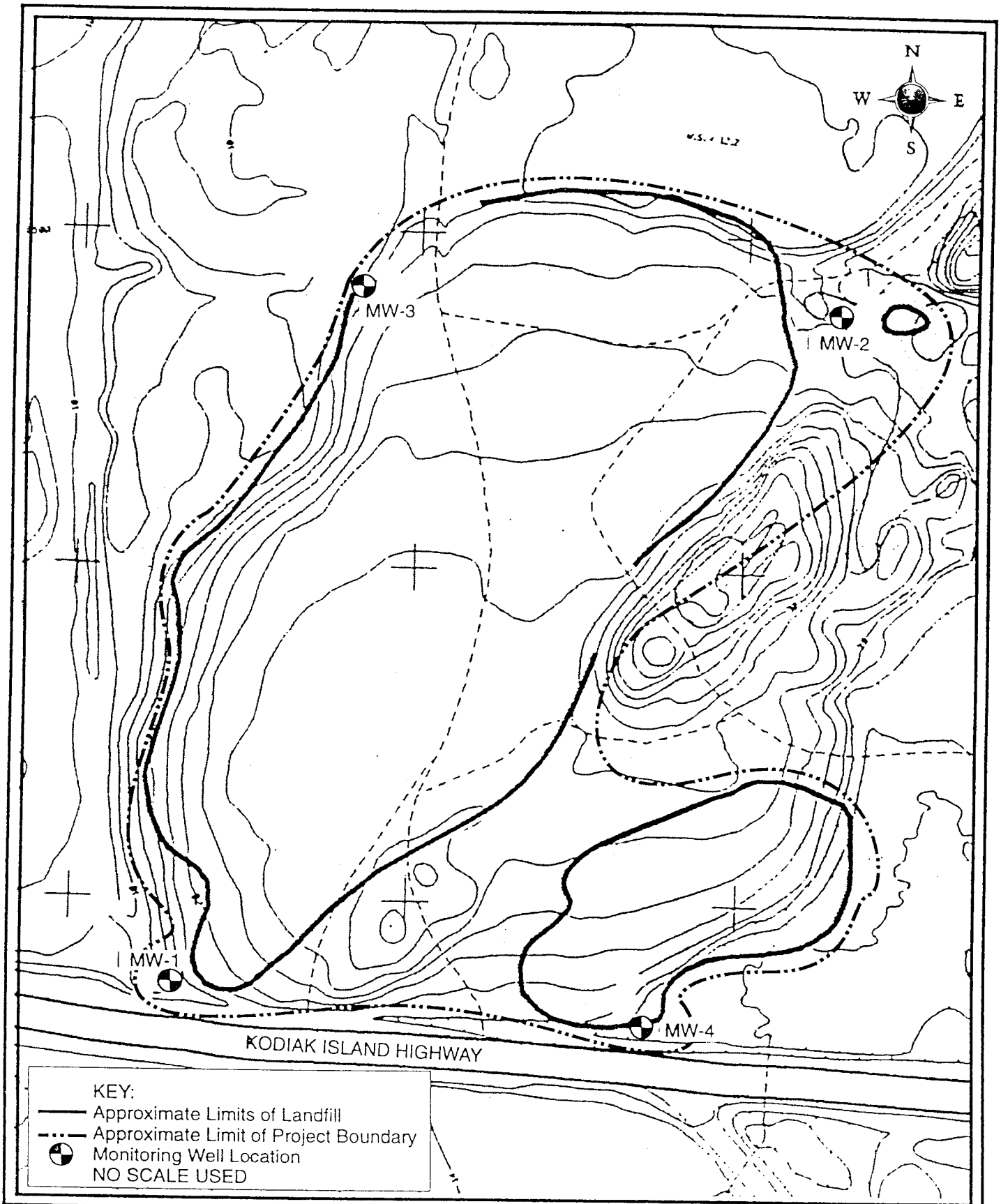
2.4 SITE INVESTIGATIONS

In 1983 the Defense Environmental Restoration Program (DERP) was created as a continuation of the Department of Defense (DOD) Installation Restoration Program. DERP provided authority and funds to remediate active and formerly owned military properties across the country. The U.S. Army Corps of Engineers (ACOE) was selected as DOD's agent responsible for implementing DERP. In 1991 Harding Lawson Associates (HLA) was retained by the ACOE under DERP to determine site boundaries



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	BRUHN POINT LANDFILL KODIAK, ALASKA	Figure 2-1 SITE LOCATION MAP

Drawn By:	Date	TDD/Job No.	Dwg. No.
MRE	06-19-96	96-03-0018	KJ0100



ecology and environment, inc.
International Specialists in the Environment
Seattle, Washington

BRUHN POINT LANDFILL
KODIAK, ALASKA

Figure 2-2
SITE MAP

Drawn By:	Date	TDD/Job No.	Dwg. No.
MRE	06-19-96	96-03-0018	KJ0100

and identify potential exploratory soil boring locations. HLA conducted a geophysical survey to delineate subsurface debris using electromagnetic conductivity (EM), ground penetrating radar, and a pipe and cable locator. The main landfill was determined to be approximately 300 feet by 500 feet and included two smaller, adjacent areas marked by anomalous EM responses. HLA also noted surficial and buried single debris items, and produced a digitized topographic map based on field observations and aerial photographs (Montgomery Watson, 1994).

In 1993, the ACOE contracted Montgomery Watson to perform a remedial investigation of the site, also under DERP. The investigation was designed to further identify possible sources of contamination, confirm the presence or absence of contaminants, and assess the magnitude and extent of possible contamination (Montgomery Watson, 1994).

Based upon the geophysical survey conducted by HLA, the site conditions at the time, and the geologic and hydrologic settings, four boring locations were chosen for investigation of subsurface soils. The boring locations were set outside the perimeter of the landfill in order to characterize potential contaminant migration. Each borehole was later converted to a monitoring well so that groundwater quality upgradient and downgradient of the landfill could also be investigated (Montgomery Watson, 1994).

During drilling of the soil borings, subsurface soil samples were collected from the unsaturated zone to determine the horizontal and vertical extent of contamination, as well as to determine the types of contaminants present and their concentrations. Subsurface soil samples were collected using the same truck-mounted hollow-stem auger used to drill the soil borings. Drilling was extended until auger refusal, bedrock, or groundwater was encountered up to a maximum depth of 20 feet below ground surface. Both groundwater and bedrock were extremely shallow, limiting the depth of subsurface soil sampling to intervals of 0.5 to 1.5 feet and 3.5 to 4.5 feet below ground surface. Each sample was screened using a photoionization detector to discern whether organic vapors were present. Because exact contaminants were not known, the samples were submitted for analysis of volatile organic compounds, diesel range and gasoline range organic compounds, total recoverable petroleum hydrocarbons, pesticides and polychlorinated biphenyls (PCBs), semivolatile organic compounds, and metals including mercury (Montgomery Watson, 1994).

Following soil boring drilling and subsurface soil collection, monitoring wells were installed within the borings and developed following standard operating procedures (see Figure 2-2 for well locations). Subsequent to well development, groundwater samples were collected. Again, because the exact type of contaminants were not known, samples were analyzed for a wide range of parameters. Groundwater sample analyses were for the same parameters as soil samples, as well as for total organic carbon, gross radiological, total dissolved solids, sulfate, chloride, alkalinity, chemical oxygen demand, cyanide, nitrite and nitrate, ammonia, and methylene blue active substances (Montgomery Watson, 1994).

Sample locations 1 and 4, both of which are situated between the landfill and the adjacent highway, contained the only contaminants with levels exceeding detection limits, regulatory benchmarks, or background levels. Elevated concentrations of diesel range organics and pesticides were detected in soil samples collected from boreholes BH-1 and BH-2, and petroleum hydrocarbons were detected in groundwater samples subsequently collected from monitoring wells MW-1 and MW-4 (Montgomery Watson, 1994).

Based on the resultant analytical data, Montgomery Watson concluded that contaminants of concern were not originating from the landfill, but were more likely attributable to residual effects of road maintenance procedures such as oiling and grading the highway, and vegetation control (Montgomery Watson, 1994).

3.0 MIGRATION/EXPOSURE PATHWAYS AND TARGETS

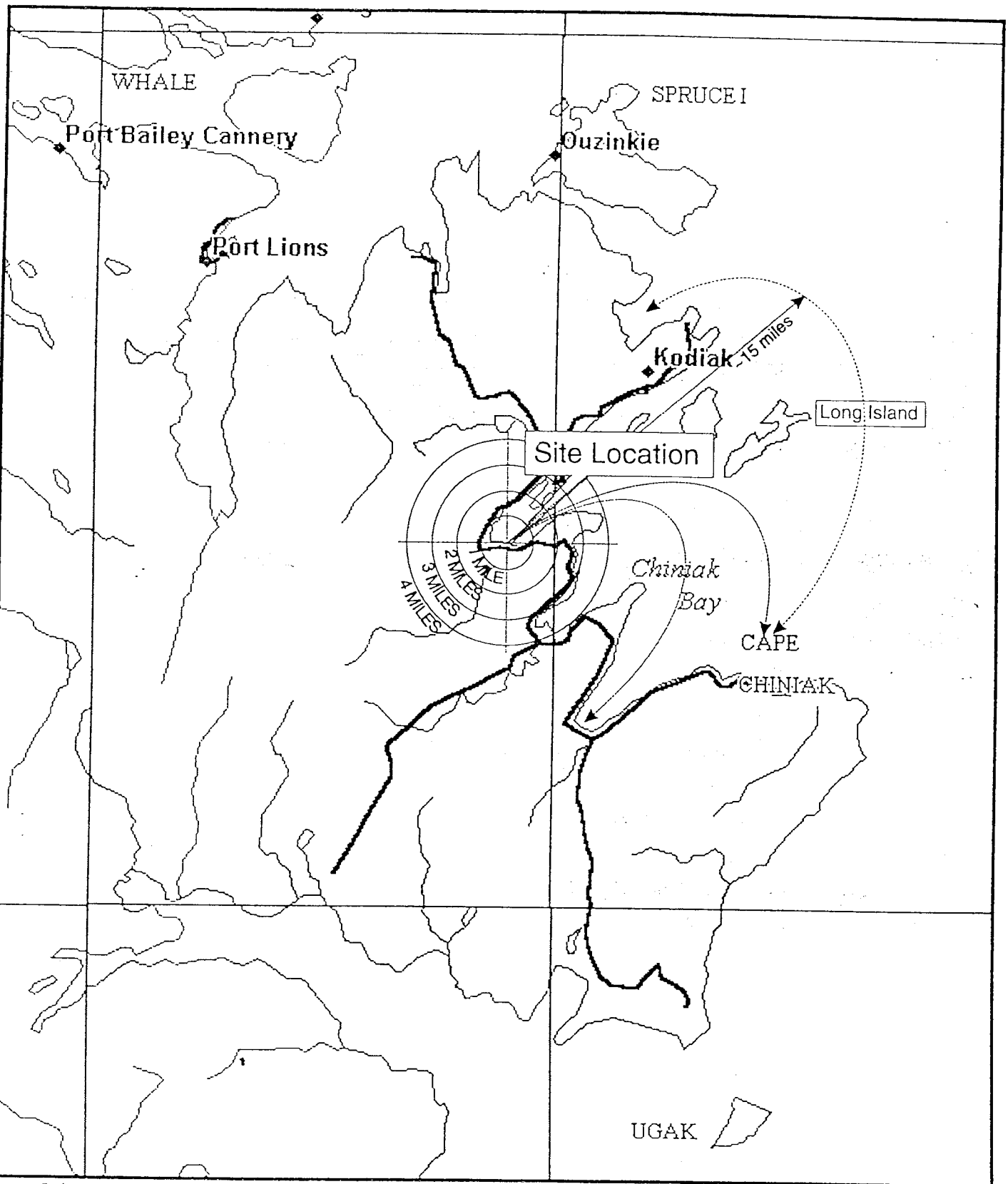
The following sections describe migration/exposure pathways and potential targets within the site's range of influence (Figure 3-1).

3.1 GROUNDWATER MIGRATION PATHWAY

The geology of Kodiak Island can be characterized by metamorphosed sedimentary and igneous bedrock underlying unconsolidated Quaternary deposits (Montgomery Watson, 1994). The Cretaceous Kodiak Formation and the Tertiary Ghost Rocks Formation underlie the northeast part of Kodiak Island and are both estimated to be at least 5,000 meters thick. The Kodiak Formation is comprised of thick mudstone and shale sequences with interstratified sandstone beds and minor conglomerates that have largely been metamorphosed to argillite, slate, and graywacke. The Ghost Rocks Formation is characterized by sheared and highly deformed shale, argillite, and mudstone with isolated sandstone and siltstone facies (Montgomery Watson, 1994).

The bedrock surface in the Kodiak area is variable blanketed by Quaternary deposits of glacial drift, alluvium, and volcanic ash. Glacial till and outwash are widely distributed in the lower portions of the island and only as thin and discontinuous patches on uplands and steep ridges. Alluvial sand and gravel deposits are found in coastal areas and occupy the valleys of major streams, in some places up to 500 feet thick. A coarse and dense layer of volcanic ash is observable in the upper soil layers as a result of the 1912 eruption of Novarupta, which is located northwest of Kodiak Island on the mainland (Montgomery Watson, 1994).

During construction of the four soil borings, Montgomery Watson found that the upper soil horizons were variable depending on the amount of sand and gravel contributed by fill material, roadbase material, and weathered bedrock. Sandy organic soils indicative of the local marsh environment, and underlying silty sands, coarse-grained sands, and gravel, extended from the surface to greater than 12 feet in depth. The gravel was identical to bedrock fragments in the area, which were encountered in the borings from five feet to greater than 12 feet deep. Bedrock outcrops are visible in several locations



ecology and environment, inc.
International Specialists in the Environment
Seattle, Washington

BRUHN POINT LANDFILL
KODIAK, ALASKA

Figure 3-1
SITE RANGE OF INFLUENCE

Drawn By:	Date	TDD/Job No.	Dwg. No.
MRE	06-19-96	96-03-0018	KJ0100

throughout the southern end of Women's Bay. Montgomery Watson reported the rock appeared well indurated and had a silt/clay grain size, with approximately 5% very fine-grained sand inclusions. Based on these physical characteristics the bedrock at the site matches the regional Kodiak Formation, which is metasedimentary and has a typically dark blue/gray color (Montgomery Watson, 1994).

Groundwater on Kodiak Island occurs in both the bedrock and the unconsolidated deposits. Quantities sufficient for domestic use have been found in bedrock formations, with yields between 1-15 gallons per minute (gpm). Well depths range from 54 to 260 feet and often penetrate zones of fracturing within the bedrock. Larger wells with yields of greater than 200 gpm have been drilled into formations of shale, sandstone, and conglomerates at depths between 300 and 400 feet (Montgomery Watson, 1994).

Better yields are associated with the unconsolidated or alluvial deposits, with wells completed in shallow alluvial gravel or coastal marine deposits providing up to 125 gpm. However, in some areas the unconsolidated deposits are too thin or discontinuous to yield significant quantities, and wells located near the coastline may be subject to saltwater intrusion (Montgomery Watson, 1994).

Groundwater in each of the soil borings was encountered between 0.5 and 10 feet below grade, and was observed to fluctuate due to the tidal influence of adjacent Women's Bay. Of the variable soils overlying bedrock, the coarse-grained sands and gravel are more likely to respond to daily tidal recharge and discharge than the finer-grained silts and sands. Saltwater intrusion into the local groundwater is very likely due also to the proximity of Women's Bay. Fresh groundwater flows from the inland areas above the site and meets the more saline groundwater near the coast, with the exact meeting point dictated by the location of bedrock, the orientation of fractures, and the degree of porosity within the bedrock. Conductivity measurements of the groundwater recorded by Montgomery Watson indicate freshwater conditions occur in the shallow groundwater horizons around the site, however deeper groundwater is more likely to be influenced by saltwater intrusion and tidal fluctuations (Montgomery Watson, 1994).

The groundwater gradient at the site is influenced by the rate of groundwater recharge and bedrock topography. Recharge occurs primarily during periods of high snowmelt and heavy precipitation, resulting in a steep gradient from the mountains toward the ocean. Once the ground-water reaches low-lying areas like the site, the flow becomes affected by tides and the gradient is less pronounced. Montgomery Watson conducted gradient contour mapping by measuring groundwater elevations during high tide and elevations from six adjacent surface water bodies, and determined that the groundwater ultimately flows in a northwest direction toward Women's Bay (Montgomery Watson, 1994).

No municipal wells are located within four miles of the site (Sullivan, 1996). From a topographical map several residences and a subdivision known as Bells Flats were identified within two miles of the site, and additional homes near the U.S. Coast Guard (USCG) base and city airport were identified within four miles of the site (USGS, 1979). According to an official with the City of Kodiak Department of Public

Works, the city municipal drinking water system does not extend to the homes in Bells Flats, or presumably to those south of the site, and as a result it is expected people living in these areas receive their drinking water through private wells, while those near the USCG base and airport receive city water (Sullivan, 1996).

A computer search by the Alaska Department of Natural Resources revealed only one registered well in the Kodiak area, a domestic well in the Bells Flats area which is 23 feet deep and approximately 1.5 miles from the site (Alaska Department of Natural Resources, 1996). It is not known how many people are served by this well, however census data indicates an average of 3.03 people per household for Kodiak Island Borough (U.S. Department of Commerce, 1990). Populations using groundwater for drinking water are summarized in Table 3-1 and do not include those near the USCG base or the airport, which are presumably connected to the city municpal system. Population values were estimated by counting the number of residences on a topographic map per distance ring and multiplying by the average of 3.03 people per household for the borough.

Table 3-1

GROUNDWATER DRINKING WATER POPULATION WITHIN A 4-MILE RADIUS

Distance (Miles)	Number of Wells	Well Population
0 - 1/4	3	9.09
1/4 - 1/2	8	24.24
1/2 - 1	15	45.45
1 - 2	62	187.86
2 - 3	33	99.99
3 - 4	2	6.06

source: USGS 1979; U.S. Department of Commerce 1990

The nearest well to the site is expected to be less than 1/4 mile south of the site (USGS, 1979). All residences within four miles of the site, which are expected to utilize private drinking water wells, are hydrologically upgradient of the site based on Montgomery Watson data that indicates groundwater flow to be toward the northwest (Montgomery Watson, 1994).

Groundwater in the area of the site is not used for irrigation or recreation purposes and is not in a wellhead protection area (Alaska Department of Natural Resources, 1996).

3.2 SURFACE WATER MIGRATION PATHWAY

The site is located within a near-shore/tidal flat environment and as a result surface water occurs in the form of tidal wetlands, small lakes, meandering streams, tide pools, and an ocean bay (Women's Bay is located immediately to the northwest). Water in the wetlands appears to either flow into the ocean or seep into Women's Bay via fractured bedrock and/or saturated soils (Montgomery Watson, 1994).

Mean annual run-off on Kodiak Island ranges from 4 to 8 cubic feet per second per square mile (Montgomery Watson, 1994). The shallow bedrock results in little infiltration in upland areas, and streams are often short and have steep gradients (Montgomery Watson, 1994). The result is that the highest streamflows occur following a rain event or during snow melt (Montgomery Watson, 1994). Stream flow, along with surface water in lakes and man-made impoundments, accounts for the majority of domestic drinking water supplies on the island (Montgomery Watson, 1994; Sullivan, 1996). The 2-year, 24-hour rainfall event for the area of the site is 2.87 inches (Ashbey, 1996). Because the site is mounded and rises above the surrounding low-lying coastal topography, there is no surface water flow run-on from upgradient areas.

The surface water migration pathway extends as a 15 mile arc into Women's Bay, and includes the whole of Women's Bay and Chiniak Bay, and a portion of the Gulf of Alaska (USGS, 1979). Given the location of the site, surface water drinking water sources are not downstream of the site (USGS, 1979). The probable point of entry for the surface water migration pathway is through the tidal wetlands, which are immediately adjacent to the site. The surface of the landfill is relatively level, so that ponding of surface water would seem to occur often, with run-off from the site occurring during periods of heavy precipitation and flowing into these wetlands.

The surface water migration pathway includes waters that are fished for sport and subsistence purposes. Sport harvest figures are available for Chiniak Bay and Mill Bay for 1994, and indicate that 18,295 fish of various species were caught for sport harvest purposes that year (ADF&G, 1995). Assuming that the average weight per fish is 10 pounds, it is estimated that 182,950 pounds of fish were sport harvested and consumed in 1994. Subsistence data indicates that in 1994 approximately 28,000 salmon were were caught in the Kodiak Management Area for consumption purposes (ADF&G, 1996). The Kodiak Management Area consists of the entire Kodiak Island Archipelago (ADF&G, 1996a), and using topographic maps it is estimated the surface water migration pathway consititutes 5% of this area. This means that 1,400 salmon were caught and consumed for subsistence within 15 miles downstream of the site in 1994. Again assuming an average weight per fish of 10 pounds, approximately 14,000 pounds of fish were consumed for subsistence in 1994 from within the surface water migration pathway. Added toether with the 1994 sport harvest figures produces a total of 196,950 pounds of fish consumed in 1994.

The tidal wetlands located adjacent to the site serve as important nesting and feeding habitat for numerous bird, mammal, and fish species. In addition, the federally-listed threatened Steller's Eider (*Polysticta stelleri*), and federally-listed endangered Aleutian Canada Goose (*Branta canadensis leucopareia*), Arctic Peregrine Falcon (*Falco peregrinus tundrius*), American Peregrine Falcon (*Falco peregrinus anatum*), and Short-tailed Albatross (*Diomeda albatrus*), occur on Kodiak Island during migrations, and would likely be found at those times either on site or within 15 miles downstream of the site (Montgomery Watson, 1994; ADF&G, 1994). The Humpback Whale (*Megaptera novaeangliae*), Bowhead Whale (*Balaena mysticetus*), Blue Whale (*Balaenoptera musculus*), Sei Whale (*Balaenoptera borealis*), Fin Whale (*Balaenoptera physalus*), Northern Right Whale (*Eubalaena glacialis*) and the Sperm Whale (*Physeter macrocephalus*) are all federally-listed endangered species known to occur in the Gulf of Alaska (Montgomery Watson, 1994; ADF&G, 1994). Lastly, the Steller Sea Lion (*Eumetopias jubatus*) is a federally-listed threatened species and is observed in the Kodiak area (Montgomery Watson, 1994; ADF&G, 1994).

It is estimated from National Wetland Inventory maps that approximately 10 miles of waterfront wetlands exist within 15 miles downstream of the site (USF&WS 1988).

3.3 SOIL EXPOSURE PATHWAY

The site is unoccupied and is no longer regularly used for business activities. The nearest regularly occupied area is the active logyard located approximately 500 feet west of the site (see photographs in Attachment A). The nearest residence to the site was estimated from a topographic map to be approximately 600 feet south of the site (USGS 1979). The site is situated along a major island highway, is not fenced, and is accessible. No terrestrial sensitive environments are known to occur at the site. Table 3-2 provides population figures for people residing within 1 mile of the site. These figures were estimated from a topographic map by counting the number of residences per distance ring and multiplying by the average number of persons per household for the borough (3.03).

3.4 AIR MIGRATION PATHWAY

No people reside on-site, however approximately 954 people live within four miles of the site. The nearest resident is located approximately 600 feet from the site (USGS, 1979). The site is used sporadically for commercial purposes and an off-road vehicle track traverses the site providing access

Table 3-2

POPULATIONS WITHIN A 1-MILE RADIUS

Distance Ring	Number of Residences	Population
0 - 1/4 mile	3	9.09
1/4 - 1/2 mile	8	24.24
1/2 - 1 mile	15	45.45
Total	26	78.78

source: USGS 1979; U.S. Department of Commerce 1990

to interior locations. No commercial agriculture or silviculture, or major recreation areas are present within 1/2 mile of the site. Approximately 7,920 acres of wetlands are located within four miles of the site (USF&WS, 1988). No federally or state-listed species inhabit the site, however Kodiak Island is known to be used by the federally-listed endangered Aleutian Canada Goose, Arctic Peregrine Falcon, American Peregrine Falcon, Short-tailed Albatross, and the federally-listed threatened Steller's Eider during migratory stopovers (Montgomery Watson, 1994; ADF&G, 1994). The actual location of these stopovers with respect to the site is not known. Table 3-3 provides populations and wetland acreage by distance ring within four miles of the site. Again, population figures were estimated by applying the average number of people per household for the borough (3.03) to residences located on a topographic map.

Table 3-3

POPULATIONS AND WETLAND ACREAGE WITHIN A 4-MILE RADIUS

Distance (Miles)	Number of Residences	Population	Wetland Acreage
On a source	0	0	0
0 - 1/4	3	9.09	80
1/4 - 1/2	8	24.24	320
1/2 - 1	15	45.45	1,280
1 - 2	62	187.86	1,600
2 - 3	95	287.85	2,240
3 - 4	132	399.96	2,400
Total	315	954.45	7,920

source: USGS 1979; U.S. Department of Commerce 1990, USF&WS 1988

4.0 REFERENCE LIST

Alaska Department of Fish and Game (ADF&G), 1994, Alaska's Threatened and Endangered Species, 1994, with funding from the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Bureau of Land Management, and the U.S. Forest Service, Juneau, Alaska.

_____, 1995, Harvest, Catch, and Participation in Alaska Sport Fisheries During 1994, Fishery Data Series No. 95-24, Division of Sport Fish, Anchorage, Alaska.

_____, 1996, Fax of Table 10, Subsistence salmon fishery harvest summary by species by year for the Kodiak Management Area, 1962-1995, sent to Mike Martin, Ecology and Environment, Inc., Seattle, Washington.

_____, 1996a, Fax of Article 10, Kodiak Area, sent to Jeryl Kolb, Ecology and Environment, Inc., Seattle, Washington.

Alaska Department of Natural Resources, 1996, Division of Mining and Water Management, Hydrology Section, Anchorage, Alaska, fax from Roy Ireland of Hydrologic Survey, to Jeryl Kolb, Ecology and Environment, Inc., Seattle, Washington.

Ashbey, Jim, 1996, National Oceanic and Atmospheric Administration, Climatic Data Center, Reno, Nevada, telephone conversation with Jeryl Kolb, Ecology and Environment, Inc., Seattle, Washington.

Montgomery Watson, 1994, Remedial Investigation, Bruhn Point Landfill, Kodiak Island, Alaska, Contract No. DACA85-93-D-0011, Delivery Order No. 0006, U.S. Army Corps of Engineers, Alaska District, Anchorage, Alaska.

Nefheim, David, 1996, Forester, Leisnoi, Inc., Kodiak, Alaska, telephone conversation with Jeryl Kolb, Ecology and Environment, Inc., Seattle, Washington.

Sullivan, John, 1996, Department of Public Works, City of Kodiak, Alaska, telephone conversation with Jeryl Kolb, Ecology and Environment, Inc., Seattle, Washington.

U.S. Department of Commerce, Bureau of the Census, 1990, Table 6 Household, Family, and Group Quarters Characteristics, Summary Population and Housing Characteristics, Alaska.

U.S. Fish and Wildlife Service (USF&WS), 1988, National Wetland Inventory maps, Kodiak (C-2), and Kodiak (D-2), Alaska.

U.S. Geological Survey (USGS), 1949 photorevised in 1979, 15 minute series topographic maps, Kodiak (C-2), and Kodiak (D-2), Alaska, quadrangles.

ATTACHMENT A

PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: Not Applicable **TDD #: 96-03-0018**
Lens Type: 50 mm **Site Name: Bruhn Point Landfill**

Photo No.	Date	Time	By	Description
1	6/4/96	1535	JK	View of the surface of the site, with stacked logs and tire ruts.
2	6/4/96	1535	JK	Three 500-gallon tanks located on site along the highway.
3	6/4/96	1535	JK	View of the entrance to the site.
4	6/4/96	1540	JK	Largest area of trash and debris on site. Facing west with Women's Bay in the background.
5	6/4/96	1542	JK	Monitoring well 3 located at the northwest corner of the landfill.
6	6/4/96	1542	JK	View of monitoring well 3 in relation to the landfill in the background and the tidal marsh in the foreground.
7	6/4/96	1555	JK	View of active logyard located to the east with tidal marsh located in the foreground.
8	6/4/96	1556	JK	Monitoring well 4 located at the southeast corner of the landfill along the highway.
9	6/4/96	1556	JK	View of monitoring well 4 in relation to the landfill and the highway.
10	6/4/96	1603	JK	Monitoring well 2 located at the northeast corner of the landfill.
11	6/4/96	1603	JK	View of monitoring well 2 in relation to the landfill in the background.
12	6/4/96	1604	JK	View of monitoring well 2 in relation to small pond visible in the background through the trees.
13	6/4/96	1605	JK	View of the bulk of the landfill from the highest point on site. Note the large "puddle" on the right.
14	6/4/96	1605	JK	View to the north from the highest point on site towards the remainder of Bruhn Point.
15	6/4/96	1608	JK	Monitoring well 1 located at the southwest corner of the landfill next to the highway.
16	6/4/96	1608	JK	View of monitoring well 1 in relation to the landfill and the highway.
17	6/4/96	1608	JK	View of the west edge of the landfill alongside the marsh, with an open spot of colored surface water in the foreground.

ATTACHMENT B

REFERENCES
(Included in original report only)